

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

Claims 1 to 3 (Previously Cancelled)

Claim 4. (Previously Withdrawn) The flange assembly of claim 1 wherein said first flange further comprises a set of ribs within said pipe attachment surface for reducing the weight of said first flange.

Claim 5. (Previously Withdrawn) The flange assembly of claim 1 wherein said second flange further comprises a set of ribs within said pipe attachment surface for reducing the weight of said second flange.

Claim 6. (Previously Withdrawn) An automotive exhaust flange assembly for attaching exhaust pipes, said assembly comprising:
a first flange, made of powder metallurgically produced material, comprising a mating surface and a pipe attachment surface opposite said mating surface; and
a second flange, made of powder metallurgically produced material, comprising a sealing surface complementary to said mating surface of said first flange and a pipe attachment surface opposite said sealing surface;
wherein one of said first or second flange further comprises at least one concave recess for accepting fastening means to secure said first and second flanges when mated.

Claim 7. (Previously Withdrawn) The flange assembly of claim 6 wherein said at least one concave recess comprises a hexagonal portion at one end.

Claim 8. (Previously Withdrawn) The flange assembly of claim 6 wherein said fastening means comprises a hexagonal shoulder.

Claim 9. (Previously Withdrawn) An automotive exhaust flange assembly for attaching exhaust pipes, said assembly comprising:

a first flange, made of powder metallurgically produced material, comprising a first surface having a cavity and a pipe attachment surface opposite said first surface; and

a second flange, made of powder metallurgically produced material, comprising a sealing surface complementary to said cavity and a pipe attachment surface opposite said sealing surface;

said second flange further comprises at least one integral stud for securing said second flange to said first flange when said flanges are mated.

Claim 10. (Previously Withdrawn) An automotive exhaust flange assembly for attaching exhaust pipes, said assembly comprising:

a first flange, made of powder metallurgically produced material, comprising a mating surface and a pipe attachment surface opposite said mating surface; and

a second flange, made of powder metallurgically produced material, comprising a sealing surface complementary to said mating surface of said first flange and a pipe attachment surface opposite said sealing surface;

said first flange further comprising a hat-shaped annular recess for receiving a hat-shaped gasket.

Claim 11. (Previously Withdrawn) The flange assembly of Claim 10 wherein said second flange further comprises a protrusion corresponding to said hat-shaped annular recess of said first flange.

Claim 12. (Previously Withdrawn) An automotive exhaust flange assembly for attaching exhaust pipes, said assembly comprising:

a first flange, made of powder metallurgically produced material, comprising a mating surface and a pipe attachment surface opposite said mating surface; and

a second flange, made of powder metallurgically produced material, comprising a sealing surface complementary to said mating surface of said first flange and a pipe attachment surface opposite said sealing surface;

said first flange comprising an v-shaped annular rib;

said second flange further comprising a v-shaped annular recess for receiving said annular rib.

Claim 13. (Previously Withdrawn) The flange assembly of claim 12 wherein said first flange further comprises a pipe attachment means arranged on said pipe attachment surface of said first flange.

Claim 14. (Previously Withdrawn) The flange assembly of claim 12 wherein said second flange further comprises a pipe attachment means arranged on said pipe attachment surface of said second flange.

Claim 15. (Previously Withdrawn) An angled exhaust flange assembly comprising:
an exhaust pipe having a first and a second end;
a flange securable to an end of the pipe;
the first end of the pipe being angled a pre-determined amount away from the second end of the pipe so that an angled flange assembly is provided when the flange is fastened to the first end.

Claim 16. (Previously Withdrawn) The angled exhaust flange assembly as recited in claim 15, wherein the pre-determined amount is substantially 135 degrees.

Claim 17. (Previously Withdrawn) The angled exhaust flange assembly as recited in claim 15, wherein a second flange is fastened to the second end of the pipe.

Claim 18. (Previously Withdrawn) The angled exhaust flange assembly as recited in claim 15, wherein the flange is a spherical flange.

Claim 19. (Previously Withdrawn) The exhaust flange assembly as recited in claim 17, wherein the second flange is a spherical flange.

Claim 20. (Previously Withdrawn) An angled exhaust flange assembly comprising:
an exhaust pipe having a first and a second end;
a flange;

an angled portion, having a first end connected to the flange and a second end connected to the first end of the exhaust pipe for providing an angled exhaust flange assembly.

Claim 21. (Previously Withdrawn) An exhaust flange assembly for sealingly connecting exhaust pipes to each other, said assembly comprising:

a female flange having a mating surface and a pipe attachment surface; and

a male flange having a mating surface and a pipe attachment surface;

where spacers are arranged on said pipe attachment surface of either said female flange or said male flange to provide a pre-determined minimum clearance between said pipe attachment surface and fastening means;

said spacers being integrally formed when the flange is manufactured via a powder metallurgy process.

Claim 22. (Previously Withdrawn) The exhaust flange assembly as recited in claim 21, wherein the spacers are separately formed and bonded to the flange during a sintering operation.

Claims 23 to 27 (Previously Cancelled)

Claim 28. (Previously Withdrawn) A flange for use in a flange assembly comprising:

a sealing surface for mating with a sealing surface of a second flange and a pipe attachment surface;

said sealing surface comprising at least one raised area for reducing deflection of said flange when said flange is mated; and

a set of mounting holes for receiving fastening means securing mating of flange to said second flange.

Claim 29. (Previously Withdrawn) A flange for use in a flange assembly comprising:

a sealing part comprising a cavity for receiving a complementary surface of a second flange; and

a back plate having a recess, in a first surface, for receiving and housing said sealing part and a second surface providing a pipe attachment surface.

Claim 30. (Previously Withdrawn) The flange assembly of Claim 1 wherein said first flange comprises 0.75 to 1 weight percent of hexagonal boron nitrate.

Claim 31. (Previously Withdrawn) The flange assembly of Claim 1 wherein said second flange comprises 0.75 to 1 weight of hexagonal boron nitrate.

Claims 32 to 71 (Previously Cancelled)

Claims 72 to 90 (Cancelled)

Claim 91. (New) An exhaust flange, for use with a gasket, for mounting on the end of a first exhaust pipe for securing to a complementary exhaust flange secured to the end of a second exhaust pipe, said exhaust flange having a two part body including a first portion and a second portion, said two-part body extending radially outwardly from a central opening for said first exhaust pipe;

wherein said first portion is manufactured of sintered powdered metal, and said second portion of a metal other than a sintered powdered metal.

Claim 92. (New) An exhaust flange as in claim 91, where said exhaust flange has an element shaped to receive an annular sealing gasket.

Claim 93. (New) An exhaust flange as in claim 92, where said element shaped to receive an annular sealing gasket is a protrusion from the exhaust flange.

Claim 94. (New) An exhaust flange as in claim 92, where said element shaped to receive an annular sealing gasket is a recess in the exhaust flange.

Claim 95. (New) An exhaust flange as in claim 91, where one of said first and second portions has a cylindrical recess in one face thereof, coaxial with said central opening, and the other of said first and second portions has a cylindrical outer portion fitting within said cylindrical recess.

Claim 96. (New) An exhaust flange as in claim 95, wherein said other of said first and second portions has a recess therein shaped to receive an annular sealing gasket.

Claim 97. (New) A method of manufacturing an exhaust flange for mounting on the end of a first exhaust pipe for securing to a complementary exhaust flange secured to the end of a second exhaust pipe, said exhaust flange having a body extending radially outwardly from a central opening for said first exhaust pipe, said method comprising the steps of:

preparing a first body portion of sintered powdered metal;

preparing a second body portion of a metal other than a sintered powdered metal, having a complementary shape relative to said first body portion; and

assembling said first and second body portions as a unit, to thereby define said body of said flange.

Claim 98. (New) A method as in claim 97, where said body has an element shaped to receive an annular sealing gasket.

Claim 99. (New) A method as in claim 98, where said element shaped to receive an annular sealing gasket is a protrusion from the body.

Claim 100. (New) A method as in claim 98, where said element shaped to receive an annular sealing gasket is a recess in the body.

Claim 101. (New) A method as in claim 97, where one of said first and second portions has a cylindrical recess in one face thereof, coaxial with said central opening, and the other of said first and second portions has a cylindrical outer portion fitting within said cylindrical recess.

Claim 102. (New) A method as in claim 101, wherein said other of said first and second portions has a recess therein shaped to receive an annular sealing gasket.

Claim 103. (New) An exhaust flange for mounting on the end of a first exhaust pipe for securing to a complementary exhaust flange secured to the end of a second exhaust pipe, said exhaust flange having a two-part body including a first portion and a second portion

integrated together to form as a sealing member, said two-part body extending radially outwardly from a central opening for said first exhaust pipe;

wherein said first portion is manufactured of sintered powdered metal, and said second portion of a metal other than a sintered powdered metal.

Claim 104. (New) An exhaust flange as in claim 103, where one of said first and second portions has a cylindrical recess in one face thereof, coaxial with said central opening, and the other of said first and second portions has a cylindrical outer portion fitting within said cylindrical recess.